Re-examining the concept of sustainable development in light of climate change

Julien Chevallier

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Abstract:

This article provides a critical appraisal of the concept of sustainable development in light of climate change. As the latest climate change science indicates strong effects of anthropogenic activity on global warming, we review the pros and the cons of prioritizing development over environmental protection. The methodology used consists in critically discussing the arguments of scientists and academic researchers in the environmental economics field to put a greater emphasis on the preservation of the environment vs. urging development issues. We show that the debate over prioritization does not make sense insomuch as the wider consequences of climate change are envisioned, i.e. it does not appear conceptually appropriate to think about environment and development issues in separate spheres. Our main contribution consists in embracing a holistic approach to discuss sustainable development issues within the new international framework of climate change policy and anthropogenic global warming concerns.

Keywords: climate change policy, sustainable development, prioritization, development, environmental protection, global warming.

[1] University of London, Imperial College of Science, Technology and Medicine, South Kensington Campus, London SW7 2AZ, UK. Email address: *j.chevallier@imperial.ac.uk*

Introduction

According to the World Bank indicators (2001), 1.2 billion of the world's 6 billion people live on less than $1 a day. Even if the new methodology used for the poverty headcount has been criticized by Wade (2004), those figures still represent the best estimates for the spread of worldwide poverty, with 18% of the population living under $1 a day and 53% under $2 a day. Compared to the costs of environmental protection in developed countries – estimated at 2.6% of GDP in the USA in 2000 by Jaffe and al. (1995) – some scholars have argued that scarce resources would be better spent on development rather than environmental protection. As Lomborg (2004a) puts it:

> "The Copenhagen Consensus was the first project to prioritize the major challenges facing the world. Morally, we must focus on the best priorities first, or we do less good for humanity. Prioritization means not everything is done first."

By relying on general rules of thumb, the core idea of prioritization appears all too easy. On the one hand, governments are not able to address all problems at the same time, i.e. corruption, conflicts, malnutrition, climate change, etc. On the other hand, every dollar should be spent in the best achievable way (Lomborg, 2004c). Prioritization shall not be confused with targeting, which consists in a specific econometric technique designed to identify the recipients of development programs, as explained by Duflo (2003) and Miguel and Kremer (2004).

The design of the Copenhagen consensus (CC) to spend an extra $50 billion over four years (Lomborg, 2004c) has been criticized as being unrealistic to tackle real problems. According to Sachs (2004), it corresponds to investing 0.03% of annual donor-country income, while the current Official development assistance (ODA) totals $69 billion per year, i.e. 0.25% of donor GDP with a target of 0.7%.

The main difficulty lies in finding effective solutions to alleviate poverty, with reforms ranging from a more equal distribution of factors of production (land, labour, human and physical capital), to access to credit and insurance, the provision of good health and nutrition facilities. This complex web of reforms makes it unlikely to subscribe to the view that "for just half the cost of Kyoto we would give all third world inhabitants access to basics like health, education and sanitation" (Lomborg, 2004b).

Similarly, Lomborg (2001) points out that weak institutions in developing countries might prevent them from honouring environmental commitments. But the problem of

institutional quality is common to development, as explained by a new economic literature including Engerman and Sokoloff (1997), Acemoglu, Johnson and Robinson (2001), McArthur and Sachs (2001) and Rodrik, Subramanian and Trebbi (2002). Without sound institutions, it seems unlikely that the fungibility of aid in poor countries will be reduced, or that political elites will change their consumption behaviours that lead to debts.

This article re-examines the concept of sustainable development in light of climate change by critically analyzing whether it makes sense to prioritize development over environmental protection. In Section 1, we demonstrate that proponents of prioritization may draw misleading interpretations from environmental cost-benefit analysis (CBA). The issue of climate change is discussed as an example of environmental protection that was rated as a "bad" project by the CC; while other projects such as controlling HIV/AIDS and malaria, providing micro-nutrients and promoting trade liberalisation hit the top of the list. In Section 2, the concept of Sustainable Development (SD) is used to examine under which conditions development and environmental protection might be reconciled. Key assumptions of the proponents of prioritization are further scrutinized, dealing with technological optimism, the existence of an Environmental Kuznets Curve (EKC) and the "resource curse" phenomenon, the appraisal of uncertainty, biodiversity loss and irreversibility. Our analysis concludes to the preservation of critical forms of natural capital. Finally, an example of reconciliation between development and environmental protection is provided with the catastrophic bonds (CAT bonds) scheme.

1. Is It Possible to Prioritize Development Over Environmental Protection When Allocating Scarce Resources?

The CC gathered only economists to come up with a list of the world's top priorities. Critics like Sachs (2004) argued that the presence of natural scientists would have been beneficial. Nevertheless, the determination of the proponents of prioritization relies on a central argument, as expressed by Lomborg (2001):

> "(…) an economic analysis of the costs and benefits of an immediate reduction in CO_2 emissions clearly shows that the world as a whole would benefit more from investing in tackling problems of poverty in the developing world and in research and development of renewable energy than in policies focused on climate change."

We explain in this section how such conclusions are reached by focusing on several steps of CBA: the input of scientific facts, the choice of the discount rate, the valuation of non-market goods and the modelling phase.

1.1 Scientific Information as an Input to CBA

Scientific facts tend to blur the debate over climate change. It is possible to say with confidence that "global average surface temperature rose by a central estimate of 0.6°C from 1861 to 2000" (Intergovernmental panel on climate change, IPCC, 2001 in Cline, 2004c). But the best estimates for a doubling of CO_2 in the atmosphere consist in a climate sensitivity of +1.4°C (which would not be very significant for human activities) to +5.8°C (which could have catastrophic consequences) according to Andronova & Schlesinger (2001). As for the United States Congressional Budget Office (CBO, 2005), this sensitivity "limits scientists' ability to accurately represent or predict the fluctuations of the climate system in great details".

Another concern lies in the time-lag that affects reduction in CO_2 emissions. The French Council of Economic Analysis (Guesnerie, 2003) - which advises the Prime Minister - indicates that "even a dramatic reduction in greenhouse gas emissions would only have a limited impact in the short-run" (2003). This goes in line with Lomborg's view that the economic costs of fighting climate change are too high compared to what can be achieved with the provision of HIV/AIDS medicines or chemically-treated bednets against malaria. However, Cox et al. (2000) recommend to take into account a "carbon-cycle feedback" that could significantly accelerate climate change over the twenty-first century under a business as usual scenario, i.e. with no preventive action against climate change. Such a phenomenon might occur as land ecosystems and the ocean cannot act as carbon sinks anymore if anthropogenic emissions of CO_2 are rising continuously.

Hence, scientific facts do not provide a clear basis for the need to prioritize development over environmental protection.

1.2 The Choice of the Discount Rate

Traditionally, there are at least two reasons to discount the future. First, individuals have positive time preference, i.e. they prefer benefits now to later. Second, because a positive interest rate exists in the economy, individuals incur an opportunity cost equal to the return on investment (Pearce et al, 2004). In presence of scientific uncertainty, Hanley (2001) argues

that no satisfactory way has been developed in CBA to include the complexity of ecosystems interactions. Therefore, "the practice of discounting in CBA (…) may lead to outcomes that are both undesirable on environmental grounds and unfair to future generations". Similarly, the CBO (2005) notes that "the discount rate chosen can dramatically affect conclusions about the appropriate stringency of policy today".

At this point, it appears useful to analyze the consequences of the discount rates used by proponents of prioritization. Lomborg (2001) recommends to use a discount rate of at least 4-6%. Compared to an average rate of return on investment of 16% in the developing world (as estimated by the World Bank), this allows him to conclude that scarce resources would be spent more efficiently on development rather than environmental protection. In the CC guidelines, each review of the literature used its own typical estimates of the discount rate. However, Lomborg (2004c) admits that it would have been preferable to provide upper- and calliper-bound estimates.

Little agreement was reached during the CC on how to discount projects with long-term environmental impacts like climate change. An ongoing debate exists between proponents of a prescriptive approach like Cline (2004a), and proponents of a descriptive approach like Manne (2004). On the one hand, the descriptive approach is rooted in mainstream economics with the adoption of market oriented rate of returns. On the other hand, the prescriptive approach uses a lower discount rate to reflect market distortions that affect the preferences of current generations toward the welfare of future generations. The debate is not solved, as Cline (2004b) claims his approach is the only appropriate framework to deal with intergenerational equity; while critics such as Manne (2004) and Mendelsohn (2004) warn that the prescriptive approach might overestimate climate-related damages and underestimate future benefits. Weitzman (1998 in Neumayer, 2003) proposes to apply declining discount rate in the future, reflecting growing uncertainty over the long-term.

To sum up, the choice of the discount rate has a decisive influence on the decision to prioritize development over environmental protection – yet there is no clear answer to this debate.

1.3 The Valuation of Non-Market Goods

As the results published by the CC rely only on CBA, it appears necessary to examine also the difficulties encountered with the valuation of non-market goods. The valuation of damages from climate change such as harm to ecosystems and adverse health effects for humans may be problematic. For instance, the valuation of biodiversity using the contingent

valuation method (CVM) is dependent on the absence of systematic bias, the sample choice and the writing of scenarios. Even if the National oceanic and atmospheric administration (NOAA) panel chaired by Arrow (1993) recognized the validity of CVM in natural resource damage assessment - provided some best-practice guidelines are followed, specific values derived for biodiversity might not be accepted by all experts given those biases.

Another example may be found with the valuation of health effects in developing countries. Benefits transfer is routinely used by CBA analysts since it represents a costless means to access existing data instead of colleting new ones– simply by transferring them from developed countries. This methodology may be criticized for not matching the target population and it appears preferable to collect estimates on a case-by-case basis which tends to increase the costs of CBA studies.

Besides, the French Council of Economic Analysis (Guesnerie, 2003) stresses the fact that non-market damages of climate change have the characteristics of a public good. For example, concerning species loss each country has the incentive to free-ride by not participating in global agreements to fight climate change and let other countries bear the costs of species preservation.

Both non-market goods valuation, which is inherently difficult, and public good characteristics of climate change damages make suspicious the accuracy of the results published by the CC. CBA does not seem to be well equipped to deal with these issues, which further undermines the claim for a prioritization of development over environmental protection.

1.4 The Modelling Phase

That Lomborg (2001) denounces the lack of improvement of the basic range of climate change estimates over the past 25 years does not imply that the noise from the models is too big to formulate policy – as he wrongly concludes. It seems more useful to discuss the assumptions on which different sets of models are based, and then to derive conclusions concerning their ability to guide decision making.

As for the proponents of prioritization, the conclusion reached by the United Nations IPCC (2001) might lead to overestimates in the speed of climate change. Lomborg (2001) criticizes the IPCC business-as-usual scenario for using a predicted +1% CO_2 emissions increase per year, while +0.6% seems more realistic. On the contrary, Nordhaus and Boyer (2000) concludes that the impacts from climate change are likely to be quite modest for the next century. Their model has been considered as a milestone by many critics of immediate

action to mitigate climate change, but it relies on strong assumptions. First, the climate sensitivity for a doubling of CO_2 was thought to be between +1-3°C when it was published. Yet the new climate sensitivity of +1.5-5.8°C that was discussed earlier should be plugged into this model to determine if it affects the urgency of immediate action. Second, the hypothesis of a "carbon-cycle feedback" as described by Cox et al. (2000) should also be included. Third, Nordhaus and Boyer assume that in any catastrophic scenario a solution could be found. This assumption corresponds to what Böhringer & Löschel (2002) call "subjective judgements" that are implicit to the design of any model. Here, subjective judgements are tainted with the faith that human creativity can solve future problems. For instance, Nordhaus and Boyer conclude that the damages for the United States, Japan, Russia, and China are essentially zero around 2100, assuming that catastrophic scenarios do not materialize.

In our view, it appears more realistic to wonder today what we could do to minimize the dramatic consequences of catastrophic events if they were to materialize. Examples of challenges at stake can be found in Cline (2004a) with the shut-down of thermohaline circulation in the Atlantic ocean; and Biermann (2001) with changes in monsoon cycles in Southern and East Asia where farming practices have a limited ability to adjust. As Lélé (1991) suggests, empirical questions like these should be considered apart from mathematical models.

Consequently, the appraisal of models by the CC should not be taken at face value. That Nordhaus and Boyer find an optimal reduction in global carbon emissions of 5% at present allows Lomborg (2001) to compare this amount with five times the ODA. Our point is precisely to question whether such comparisons make sense by analyzing rigorously their underlying assumptions. Yet evidence suggests that proponents of prioritization are keen to jump to conclusions. For instance, Sachs (2004) notes that, during the experts meeting of the CC, alternative proposals - which could have changed the final ranking in favour of a low carbon tax - have not been properly assessed.

Additional evidence has been provided during the modelling phase to cast doubts on the necessity to prioritize development over environmental protection.

To sum up this first section, we demonstrated that development cannot be prioritized over environmental protection as easily as thought by participants of the CC when allocating scarce resources. Economic analyses based on environmental CBA are characterized by many sources of subjective judgments, i.e. with the input of scientific facts, the choice of the

discount rate, the valuation of non-market goods and during the modelling phase, that may conduct to misleading interpretations. In the next section, we discuss under which conditions development and environmental protection might be reconciled.

2. Under Which Conditions Development and Environmental Protection Might Be Reconciled When Allocating Scarce Resources?

> "When it comes to dilemmas for choosing between the environment and today's poor, (…) it seems to me the debate has missed a key consideration." Cline (2004b)

This quote from a participant of the CC suggests that development and environmental protection might be reconciled within the framework of SD, as defined by Neumayer (2003): "development is defined (…) to be sustainable if it does not decrease the capacity to provide non-declining per capita utility for infinity". At the heart of SD lies the question whether natural capital is substitutable with other forms, i.e. man made, human and social capital.

The debate over the substitutability of natural capital has been polarized by proponents of weak sustainability (WS) - who accept it, and proponents of strong sustainability (SS) - who reject it. The study of both paradigms will conduct us to the categorization of the forms of natural capital that need to be preserved.

The flaws of environmental CBA highlighted in the first part are complemented with an analysis of the key assumptions on which the proponents of prioritization rely. Technological optimism will be of particular importance, along with other issues such as the existence of an EKC, the appraisal of uncertainty, biodiversity loss and irreversibility. An example of reconciliation between development and environmental protection is also provided.

2.1 The Implicit Assumption of Substitutability and the Limits of Technological Optimism

The optimists' creed consists in not worrying about depleting natural resources as long as it is possible to find substitutes for natural resources. By listing environmental protection alongside developmental goals, proponents of prioritization implicitly endorse the substitutability assumption in the spirit of WS. In our view, this assumption goes hand in hand with technological optimism.

Technological optimism is associated with Boserup's (1972) thesis of endogenous technical change according to which pre-industrial agricultural systems had changed in response to increases in population density. Scarcity plays a central role, as it becomes apparent through price changes and encourages technological innovations or changes. This view is expressed by Lomborg (2001) when he states that under reasonable scenarios of technological change renewable energy will become cheaper, we will move towards cleaner way of living, and thus the impact of human activity on the environment will be far better than expected. This description is very convenient since it does not suppose to change our current consumption levels, and allows prioritizing scarce resources on development. But it does not seem to meet reality, as Edmonds and al. (2001) conclude research and development effort over the last decade has been decreasing.

Interestingly, the technological optimism of proponents of prioritization does not support the Porter hypothesis (Porter and van der Linde, 1995) which consists in win-win agreements between environmental protection and profitable opportunities. On the one hand, Lomborg (2001) remains skeptical about the existence of low-hanging fruits that companies would not have seized yet. On the other hand, the French Council of Economic Analysis (Guesnerie, 2003) suggests the existence of so-called "ancillary benefits" whereby immediate action to reduce CO_2 emissions can also mean reduced pollution, which will make the social cost lower.

This optimism appears also limited by Lomborg's (2001) fear of the failure of the Kyoto Protocol (KP) since developing countries are not included. In our opinion, a more realistic approach would consist in considering the KP as a first step for Annex 1 countries, whereby they develop expertise in this field, and then extend it after the first period (2008-2012). The Clean development mechanism (CDM) within the KP also allows building projects involving clean technologies investments in developing countries.

Another example may be found in Lomborg's (2001) interpretation of the "pollution havens" hypothesis, whereby polluting factories would move to developing countries as a result of the KP. There is however no conclusive empirical evidence concerning this hypothesis as discussed by Neumayer (2001). Some activities cannot be exported for profit abroad and multinationals may be wary of their reputation if their practices are revealed. Additionally, it might be cheaper to build factories with new technologies rather than end-of-pipe technologies. These remarks lead us to hypothesize that proponents of prioritization introduce a bias regarding technological change by adopting it when it allows avoiding immediate costs, and rejecting it when it favours environmental protection.

To summarize, the substitutability of natural capital on which proponents of prioritization implicitly rely is linked to technological optimism. But a critical analysis of this optimism does not provide more ground for prioritization. A bias against environmental protection has even been hypothesized.

2.2 The Existence of an EKC and the Resource Curse Phenomenon

It follows from technological optimism that an EKC exists, i.e. an inverted U-curve relationship between environmental degradation and per capita income. But there might be dangerous policy implications with the "pollute first, clean up later" logic of the EKC.

Lomborg (2001) predicts that once developing countries have grown they would be "rich enough to afford to help the environment, reforest and set aside parks." From this perspective, the environment is seen as a luxury good with an income elasticity of environmental amenities bigger than one, as described by Krutilla and Fisher (1975 in Neumayer, 2003). Whether economic growth will be beneficial or harmful to the environment remains nevertheless highly uncertain. The existence of the EKC represents a best-case scenario, since many air and water pollutants are expected to rise in developing countries and the income thresholds are not fixed as discussed by Cole and Neumayer (2002). Besides, there is no definitive empirical evidence concerning the capacity of developing countries to "tunnel through" the EKC using cleaner technologies (Cole and Neumayer, 2002).

Surprisingly, proponents of prioritization seem to ignore the "resource curse" phenomenon identified by recent econometric studies, whereby resource-rich countries like Nigeria or Argentina are growing slower on average than resource-poor countries like South Korea - due mainly to institutional quality. Lomborg (2001) relies on the optimistic assumption that "many developing countries will be (…) considerably richer and better developed and therefore more capable of handling the problems of the future". But empirical evidence gathered by Sachs and Warner (2001) does not confirm this statement.

The technological optimism that justifies prioritization does not seem to stand to further analysis. Empirical evidence concerning the existence of an EKC is mixed, while the resource curse phenomenon is surprisingly ignored. The assumptions dealing with uncertainty will be explored in the next section.

2.3 Different Approaches to Deal with Uncertainty

Uncertainty, as defined by Neumayer (2003), refers to a situation where different states of the world together with their outcomes and distribution of risks are not known with

certainty. Uncertainty plays a central role in Beck's (1986) risk-society where extreme poverty and extreme risks are linked, as illustrated by vulnerability to disasters. That Giddens (1990) stresses environmental problems acquire a global and irreversible dimension in the late modernity allows us to conclude that participants of the CC may underestimate low probability / high consequence risks. Manne (2004) recognizes that uncertainty exists, but solutions too. Lomborg (2001) disagrees with spending 2% of the world's production on environmental protection based on the idea that the very presence of uncertainty undermines the positive returns on investment of a project. As the UN IPCC (2005) reinforced, it appears preferable to take short-term proactive action which may be complementary with intrinsic uncertainties of long-term predictions.

The option value of delaying immediate action may be insufficient for coping with uncertainty as reported by Neumayer (2003). In the case of climate change, Nordhaus and Boyer (2000) estimated a net loss of $6 billion from waiting for more information, which is rather small compared to the $245 billion total mitigation costs of climate change. Yet Nordhaus and Boyer's computations rely on the strong assumption that appropriate action will be taken in the future, i.e. on a subjective judgement concerning the behaviour of future generations. This ignores the time-consistency problem of SD as explained by Neumayer (2003). If no immediate action in favour of the environment is taken today, then it might not be the case either in the future. Equally, if current generations devoted some of their income to protect the environment, there is no guarantee that future generations will be altruistic when facing the same choices. Hence, it is possible to conclude that proponents of prioritization rely on overly optimistic assumptions regarding uncertainty.

Concerning SD, Neumayer (2003) convincingly shows why both paradigms are non-falsifiable. Under conditions of uncertainty, it appears difficult to conclude that natural capital will always be substitutable to other forms of capital in the spirit of WS. Similarly, there is little ground to conclude that all forms of natural capital need to be conserved because of their specific attributes in the spirit of SS. That is why the precautionary principle by O'Riordan and Jordan (1995) may be seen as a solution to protect the environment against potentially serious or irreversible damage based on sufficient scientific evidence – not proof.

In short, proponents of prioritization rely on optimistic assumptions when dealing with uncertainty and tend to ignore time-consistency problems. The appraisal of uncertainty within the framework of SD called for the application of the precautionary principle, and suggested that some forms of natural capital might not be substitutable. But there lacks a precise definition of what should be preserved.

2.4 Which Forms of Natural Capital Need to be Preserved?

Biodiversity loss and the need to account for irreversibility are discussed, followed by a non-exhaustive categorization of the forms of natural capital that need to be preserved in the spirit of SD.

Proponents of prioritization tend to rely on optimistic assumptions when dealing with biodiversity loss. That Lomborg (2001) wonders "why there is any reason at all to worry about the loss of species" - since we are able to analyze only a tiny fraction of their potential benefits – seems to indicate he primarily values biodiversity as a potential source of medicines. However, this view of biodiversity as an input for profitable pharmaceutical products may underestimate the complex relationships existing in the biosphere. In our opinion, Escobar (1998) provides more ground for policy making by urging scientific research to assess the significance of biodiversity loss for ecosystem functioning. This approach seems more realistic, since with a better understanding of ecosystems it would be easier to decide where to allocate scarce resources.

These considerations shall not be separated from the question of irreversibility, whereby changes are definitive once a series of events has occurred. The French Council of Economic Analysis (Guesnerie, 2003) warned "there might exist a window of action that will not last" to protect the environment. Our ignorance of the capacity of resilience of ecosystems is further emphasized by Neumayer (2003), who presents a lottery game to explain how rational agents behave when confronted with the probability that biodiversity might provide a cure to a disease. To avoid the regret of not being able to cure the disease, the optimal solution would consist in preserving species and biodiversity. That is why proponents of prioritization may be too optimistic when stating that we should deal first with more pressing development issues such as HIV/AIDS. Maybe the cures for such diseases will come from biodiversity. This reflects Ciriacy-Wantrup's (1952) pragmatic solution with the definition of safe minimum standards (SMSs). In 1996, the IPCC proposed the adoption of "affordable" SMSs to mitigate climate change as reported by Neumayer (2003).

This brings us to the categorization of the forms of natural capital that need to be preserved in the spirit of SD. Some useful guidelines may be cited with Neumayer (2003):

> "(…) the protection of global life-support systems such as biodiversity, the ozone layer and the global climate as well as the restriction of the accumulation of pollutants

and of unsustainable harvesting and soil erosion appear to be sound insurance policies for achieving sustainability."

These critical forms of natural capital need to be preserved because they are considered as non-substitutable, unless the costs are "unacceptably high" as quoted by Neumayer (2003).

The optimistic assumptions of proponents of prioritization regarding biodiversity loss are sensitive to the introduction of irreversibility. In the spirit of SD, this leads to the adoption of SMSs and the preservation of critical forms of natural capital if development and environmental protection are to be reconciled.

2.5 The CAT Bonds Scheme

Such example of reconciliation may be found in the CAT bonds scheme described by Varangis and Skees (2001). Disaster aid (e.g. from shortfalls or excess rain, extreme temperatures, etc.) is provided depending on the performance of an index of catastrophic risk and the "trigger" (weather event) can be independently verified by private insurance companies. This scheme would allow eliminating systematic risks coming from the environment (such as droughts) in order to promote development in poor countries (such as preventing distress sales). As Morris (2005) from the UN World Food Program proposes, a pilot-project in Ethiopia will evaluate if this scheme encourages farmers to take more risks by planting higher yields crops with the certainty of being insured in case of failure. It shall be kept in mind however other political economy determinants of poverty, such as corruption or civil war, will remain.

What concerns SD, it can be concluded that the substitutability of natural capital determines under which conditions development and environmental protection might be reconciled. Optimistic assumptions to prioritization rely on the implicit endorsement of the WS paradigm. First, the EKC seems to be accepted too readily and the resource curse phenomenon is surprisingly ignored. Second, a bias against environmental protection may be hypothesized. Third, the option value of delaying environmental protection ignores time-consistency problems when dealing with uncertainty. This in turn favours the adoption of the precautionary principle. Fourth, complex relationships existing in the biosphere are not taken into account when dealing with biodiversity loss and irreversibility, which calls for the adoption of SMSs. While not fully subscribing to the SS paradigm, our analysis showed that

critical forms of natural capital need to be preserved when allocating scarce resources. An example of reconciliation between development and environmental protection was provided with the CAT bonds scheme.

Conclusion

"God does not play dice with the universe."

As Nordhaus and Boyer (2000) recall Einstein's famous reaction to quantum physics, it has been demonstrated that giving priority to development could be perceived as indeed playing dice with the environment. This article re-examines the concept of sustainable development in light of climate change policy. In our view, the debate over prioritization – which shall not be confused with targeting - remains too simplistic if it is left to blunt statements about the relative costs of environmental protection.

In Section 1, the case study of climate change provided support to the proposition that development cannot be prioritized over environmental protection as easily as thought by participants of the CC. Subjective judgements are present in environmental CBA with the input of scientific facts, the choice of the discount rate, the valuation of non-market goods and the modelling phase that may conduct to misleading interpretations.

In Section 2, the concept of SD and the question of the substitutability of natural capital were put forward in order to examine under which conditions development and environmental protection might be reconciled. Prioritization is implicitly linked to the the WS paradigm. While not fully subscribing to the SS paradigm, our analysis recommends allocating scarce resources with a clear emphasis on SD and the preservation of critical forms of natural capital. Several shortcomings of prioritization were also identified, namely regarding technological optimism, the existence of an EKC and the "resource curse" phenomenon, the appraisal of uncertainty, biodiversity loss and irreversibility.

Meanwhile, the fight against poverty has become a sacred grail for multilateral organizations over the last decades, and much effort still remains to be done. The CAT bonds scheme that was provided as an example of reconciliation between development and environmental protection showed that it is very unlikely to deal with poverty reduction as quickly as assumed by proponents of prioritization.

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